Saskatchewan Ministry of Agriculture

BEELINES

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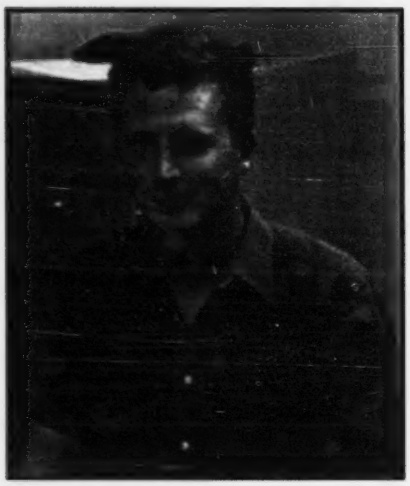
BEELINES

PRODUCTION

Introduction to Saskatchewan Beekeepers



I would like to take the time to introduce myself, Geoff Wilson, as Saskatchewan's incumbent Provincial Apiarist. John will be retiring soon and throughout this year we will be working together to do training and prepare me to take over the role.

The overlap in our tenure as Provincial Apiarist will assist in a smooth transition of the position. I will use this time to learn as much as possible about the position and its responsibilities from John.

Although new to Saskatchewan, I have dealt with some of you before. My first exposure to Saskatchewan beekeepers was during my M.Sc. at the University of Guelph about eight years ago. This project was partially funded by the Saskatchewan Beekeepers Association to bring in the first USDA Russian honey bee stock to Canada from the United States, evaluate them and disperse the best performing stock to some Saskatchewan and Ontario beekeepers. These stocks were also incorporated into breeding programs like Saskatraz.

Since graduating, my wife and I have been commercially beekeeping near Kingston, Ontario, where we focused on selling bees, making and selling honey and value-added products. We sold these products primarily through farm gate sales and a small distribution network, which included grocery stores, farmers markets and restaurants. The remaining honey was sold bulk.

I look forward to meeting Saskatchewan beekeepers, and invite you to contact me whenever you wish. I can be reached by phone: (306) 953-2304, or by e-mail geoff.wilson@gov.sk.ca. Alternatively, feel free to stop by. My office is located at 141 - 800 Central Avenue, Prince Albert.

Varroa Mite Control Using Icing Sugar

The following is a summary of a recent research paper from the Journal of Apicultural Research 48 (1):72-76 (2009) by A.M. Ellis, G.W. Hayes and J.D. Ellis entitled "The efficacy of dusting honey bee colonies with powdered sugar to reduce varroa mite populations".

Summary

Controlling varroa mite (Varroa destructor Anderson and Trueman) populations in honey bee (Apis mellifera L.) colonies with acaricides [pesticides that control mites] *has been a challenge for beekeepers due to the rapid development of resistant mite populations. For this reason, many beekeepers are adopting Integrated Pest Management strategies as alternatives to chemocentric* [chemical-focused] *varroa control schemes. One non-chemical tool that has been used for varroa control is dusting bee colonies with powdered sugar.*

The objective of our study was to determine the efficacy of powdered sugar as a varroa control by comparing mite populations, adult bee populations, and brood area in untreated colonies with those in colonies dusted every two weeks for 11 months with 120 g powdered sugar per application. We found that dusting colonies with powdered sugar did not significantly affect the adult bee population (treated: 10061.72 ± 629.42; control: 10691.00 ± 554.44) or amount of brood (treated: 4521.91 ±

342.84 cm2; control: 4472.55 ± 365.85 cm2).
We also found no significant differences between the total number of mites per colony (treated: 2112.15 ± 224.62; control: 2197.80 ± 207.75), number of mites per adult bee (treated: 0.080 ± 0.010; control: 0.097 ± 0.010), or number of mites per capped brood cell (treated: 0.112 ± 0.013; control: 0.106 ± 0.018).

All data are mean ± s.e. Within the limits of our study and at the application rates used, we did not find that dusting colonies with powdered sugar afforded significant varroa control.

As varroa mites become resistant to the registered control products, beekeepers are seeking alternative controls. This study started with 24 colonies with equalized bee populations, brood populations and varroa mite populations that were placed on screened bottom boards to enhance the mite drop.

Why do researchers think this will work for Saskatchewan?

Although the work was performed in Florida, I would suggest that the results are significant for Saskatchewan (where our season is much shorter and the length of treatment would have been much less). Clearly, the mite levels in the treated hives were the same as those in untreated control hives at the end of 11 months. The mite populations grew to over 20 per cent and likely would have killed the hives in the next year.

I am aware of one beekeeper who used icing sugar as his only organic mite control and lost all but one of 40 colonies over the winter. I would strongly suggest that this practice is not effective and recommend that if it is used, it should be done with some other proven control method.

In Memory

GROSSMAN, Jack - On April 27th, 2009.
Jack Grossman passed away in Toronto with his family by his side. He was born March 1917 in Toronto. As a young man he served in the Royal Canadian Air Force as an Aerial Photographer in World War II. Upon returning to Canada, he founded what would later become Billy Bee Honey. Billy Bee Honey grew with the development and expansion of the honey industry in Western Canada. Jack was known by many of the producers in Western Canada and was a perennial participant at the Provincial Annual Meeting and Canadian Honey Council.

HAMILTON, Bill – July 24, 1925 to January 30, 2008.
Bill was a second-generation commercial beekeeper in the Nipawin area. He and his wife Kathy operated over 1,000 colonies. Bill was an active member of the Saskatchewan Beekeepers Association and served on the executive. He is survived by his loving wife of 53 years, Kathy, his children, Robert, Jack, Scott, and Cam, their spouses, and grandchildren. Bill will be sadly missed and fondly remembered by all who knew him.

JAY, Dr. Cam – April 4, 1929 to April 25, 2008.
Cam joined the Entomology Department at the University of Manitoba in 1961 and he retired in 1991. He served as Head of the Department from 1981 to 1987 and was appointed Professor Emeritus after his retirement. He was an outstanding teacher and many of his grad students became involved with the apiculture industry across the country and internationally. The contributions to beekeeping in Manitoba, Canada, and internationally (Jamaica, Kenya, New Zealand, and Australia) have been widely recognized with a large number of provincial, national, and international awards.

Ministry Retains Office In Prince Albert

The Ministry of Agriculture will keep the position and the lab in Prince Albert. Geoff Wilson has been hired to work with John Gruszka, the Provincial Apiculturist, for the coming year and to be the replacement when John retires.

Winter Loss Survey

The Canadian Honey Council (CHC) has formulated a winter loss survey (included in this issue of Beelines). There is a bit more information requested in this survey than in the e-mail survey conducted by the Saskatchewan Apiculture Office in May.

I am encouraging all beekeepers (large and small) to fill out the CHC survey and return it to the Apiculture Office in Prince Albert (by e-mail to john.gruszka@gov.sk.ca, by fax to (306) 953-2440, or by mail to Box 3003, Prince Albert, SK, S6V 6G1).

The CHC survey is requesting information on the causes of the losses to provide some insight as to where more effort needs to be taken to minimize losses in the future.

An e-mail survey of winter losses was conducted in May by John Gruszka. Thirty producers from across the province responded to the survey. They indicated that:

1. They normally operate 28,500 colonies,
2. Approximately 35,300 colonies and nucleus colonies were prepared for winter in the fall of 2008, and
3. The total loss reported (wintering colonies and nuclei) was about 9,000 colonies.

The winter loss was approximately 25.4 per cent. However, because of the extra colonies placed into winter (of the 28,500 that are normally operated) the spring colony count is approximately 27,500 after losses are taken into account.

According to the survey, the winter losses in Saskatchewan in 2008-09 (25.4 per cent) appear to be similar to those of the past two years (25.7 in 2007-08 and 23.6 in 2006-07). This year, as in the past, several producers experienced losses in excess of 50 per cent.

Preliminary results from across the country indicate that the national average will be approximately 30 per cent.

In the United States, Dennis vanEngelsdorp, Jerry Hayes and Jeff Pettis recently reported the following preliminary results of a survey in honey bee colony losses in the United States between September 2008 and April 2009:

The Apiary Inspectors of America (AIA) and USDA-ARS (United States Department of Agriculture - Agriculture Research Service) Beltsville Honey Bee Lab conducted a survey between September 2008 and early April 2009 to estimate colony losses across the country. Over 20 per cent of the country's estimated 2.3 million colonies were surveyed. A total loss of 28.6 per cent of managed honey bee colonies was recorded. This compares to losses of 35.8 per cent and 31.8 per cent recorded respectively in the winters of 2007-08 and 2006-07. While a decrease in total losses is encouraging, the rate of loss remains unsustainable as the average operational loss increased from 31 per cent in 2007-08 to 34.2 per cent in the 2008-09 winter.

Colony Collapse Disorder (CCD) is characterized by the complete absence of bees in dead colonies or in apiaries. This survey was not able to differentiate between verifiable cases of CCD and colonies lost as the result of other causes that share the "absence of dead bees" as a symptom. The 26 per cent of operations that reported some of their colonies died without dead bees lost 32 per cent of their colonies, while beekeepers that did not lose any bees with symptoms of CCD lost a total of 26 per cent of their colonies.

Only 15 per cent of all the colonies lost during the 2008-09 winter died with symptoms of CCD. This compares to a 60 per cent colony loss with CCD-like symptoms in the winter of 2007-08. While losses from CCD may have decreased in the winter of 2008-09, losses from other causes remain a significant concern. Fifty-eight per cent of all beekeepers reported above normal losses last year, losing a total of 32.8 per cent of their colonies compared to the minority of beekeepers who claimed a normal or below normal loss of 17 per cent.

Dealing with Resistance

Some Saskatchewan beekeepers have been in the fortunate situation of having no varroa mites or experienced much later arrival of varroa to their operation when compared with the rest of the country. This has given a significant advantage to beekeepers in the province. The benefits included not having to treat hives and effective use of acaracidal products like Apistan® and Checkmite™. Unfortunately, it appears that this good situation is quickly coming to an end, as most areas are catching up with the north eastern Saskatchewan beekeepers and the rest of the country. Most of the province now has varroa, and these mites are quickly developing resistance to acaracides to the extent that control failures may be resulting in higher winter colony mortality.

In a lot of cases in Saskatchewan, the useful lifetime of Apistan® and Checkmite™ appears to be shorter than expected. Varroa mites are becoming resistant to synthetic acaracides after fewer treatments. This is likely because the invading mites have already been exposed to the mite control products and selection pressure for resistance has already started; thus the mites may already be partially resistant at time of invasion.

These developments mean that some changes will need to be made in bee management and successful beekeepers will need to be alert to the mite situation in their beehives.

Management, Not Control

Varroa mites can never be truly controlled. At best, they can be managed. Although this may seem like semantics, the difference in view of varroa treatment is substantial. Control implies that you can kill all of the mites in each colony, if desired. Complete control is not possible. Even the best varroa treatments miss some mites in the hives and mites will reinvade from other colonies.

Viewing the mite situation as a management strategy demonstrates that beekeepers are managing two populations; a population of honeybees and a population of varroa mites. Management of the mite population implies that beekeepers realize that the mites are not going to be completely wiped out. Mite management aims to keep the mite levels at thresholds that will not significantly affect the honeybee colony. Done effectively, colonies remain productive and the mites remain at non-harmful levels.

Use of Organic Acids

Formic and oxalic acids are part of a group that is often considered "soft chemicals." Although these products are organic acids, they are not necessarily safer for human contact than the synthetic acaracides like Apistan® and Checkmite™. Appropriate care and proper safety gear must be taken with the application of these chemicals. Like all mite control products, there are benefits and considerations when using formic and oxalic acids.

Benefits

- No known resistance has developed to formic or oxalic acid.
- Organic acids can be suitable for use in organic honey production.
- When applied correctly and according to the environmental conditions, organic acids can effectively control mites.

Considerations

- Efficacy can be variable depending on many factors including weather, temperature, and colony size.
- Treatments with these products are timing sensitive: oxalic acid is only effective when there is no brood in the hive. Formic acid requires a specific temperature range to work effectively.
- Colony size considerations: Formic acid must be applied at the appropriate level according to colony size. If the acid concentration is too high, there will be negative effects on the colonies, varying from losing some brood, to losing the

queen, to killing very small colonies in the worst cases. If too little formic acid is applied, there will be little effect on the varroa mite population.

- There is a longer learning curve: it takes time and practice to determine how best to treat with organic acids.

Most likely a combination of formic and oxalic acids will be needed to effectively control mites. When trying to incorporate these acids into your mite management system, it is important to take time to determine how they work. This may take a couple of trials to use them effectively. If possible, start with a maximum of 25 per cent of your operation. This exposes your bees and your business to much less risk while learning how to use these chemicals in your system.

Check Your Treatments

Make sure you know your treatments are working. We can no longer blindly trust control methods. It is important to make sure Apistan® and Checkmite™ are effective before treating with these products even if you have not previously used them in your colonies. Check the efficacy of all treatments including organic acids after treatment by sampling the colonies for mites. If a treatment was ineffective, have a back-up plan such as using an alternate treatment.

Know Your Mite Status

Varroa management is becoming much more difficult. Because the management tools are not as reliable, it is necessary to check mite levels at appropriate times so that corrective actions can be taken. It may be necessary to check for mite levels:

1. First thing in the spring to see the starting level,
2. After treating to make sure that the treatment worked.
3. In the middle of summer (i.e. immediately after first pull of honey) to determine if a fall treatment needs to be applied earlier; and
4. After the fall treatment to make sure that it worked.

When you find levels of mites above economic threshold levels (>1 per cent in spring and >3 per cent in fall), be prepared to take action to lower the mite levels.

Be Prepared For Mistakes

Make extra nucleus colonies (nucs) each year. Plan on 30 per cent mortality each spring, and make the nucs to replace that loss the season before. Having the nucs ready to use reduces the reliance on buying bees and the scramble in the spring trying to confirm their availability. When mortality is less than 30 per cent, you will have extra in the spring. With the current market for bees, surplus nucs could be used for spring cash-flow by selling them, used for expansion, or used for requeening colonies first thing in the spring. Despite the way they are used, having good strong nucs will result in economic benefits for your business.

Summary

As resistance continues to develop, it is becoming more important to be vigilant. It is going to take constant monitoring of mite levels, a combination of control tools, and preparing ahead to deal with potential problems.

Registration Update

Beelines is sent to all registered beekeepers in the province. Beelines is used to update the mailing list and every time it is printed there are returns from people who have either moved away or are no longer keeping bees.

If you are no longer keeping bees and do not foresee keeping bees in the future, contact the Apiculture Office in Prince Albert and your name will be removed from the list of registered beekeepers. You can contact us by calling (306) 953-2790 (at any time and leave a message with your name and address) or you can send an e-mail to john.gruszka@gov.sk.ca.

E-mail Addresses

If you have an e-mail address and wish to share it with the Apiculture Office, please send an e-mail to john.gruszka@gov.sk.ca or geoff.wilson@gov.sk.ca and your name will be placed on the beekeeper contacts list. In the past, and likely more frequently in the future, e-mail will be used to contact as many beekeepers as possible in order to send out information of importance to beekeepers on short notice. (For example, an e-mail survey in the spring of winter losses in the province.)

Health Canada Santé Canada

Compliance and Regional Operations
412, 101- 22nd Street E
Saskatoon, SK S7K 0E1

ARLA PMRA

Your file *Votre référence*

Our file *Notre référence*

April 9, 2009

Provincial Apiculturist
Box 3003
Prince Albert, SK S6V 6G1

OBJECT: **Pesticide misuses by beekeepers across Canada**

Dear John Gruszka,

Health Canada's *Pest Management Regulatory Agency* (PMRA) is responsible for the application of the *Pest Control Products Act* (PCPA) and its *Regulations*. The PCPA regulates the importation, sale and use of pesticides in Canada.

An inspection program was launched by PMRA in September of 2008 to verify the compliance level of beekeepers to the PCPA. This program included inspections of beekeeping facilities across Canada to ensure proper pesticide uses, as well as contacts with provincial apiarists.

The vast majority of beekeepers inspected were in compliance with the PCPA, but there were unfortunately a few pesticide misuses found across Canada. The pesticides used in violation of the PCPA in beekeeping operations are listed in the following table :

TABLE 1 : Pesticides used in violation of the PCPA by Canadian beekeepers

Pesticide (trade name)	Active ingredient	Targeted pest	Registration status
Wax moth crystals / Moth crystals	Paradichlorobenzene	Greater wax moth	Product not registered for use in beekeeping
Moth balls (many brand names)	Naphtalene	Greater wax moth	Product not registered for use in beekeeping
Certan, B401	*Bacillus thuringiensis*	Greater wax moth	Product not registered in Canada
Thymovar / Apiguard	Thymol	*Varroa destructor*	Product not registered in Canada

Concerning the use of unregistered pesticides, Section 6.(1) of the PCPA states that :

6.(1) "No person shall manufacture, possess, handle, store, transport, import, distribute or use a pest control product that is not registered under this Act"

This section of the Act applies directly to the products containing *Bacillus thuringiensis* (Certan / B401) or *thymol* (Thymovar, Apiguard) listed in Table 1, since they are being sold as pest control products to beekeepers, even though they are not currently registered in Canada.

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Concerning the unregistered use of pesticides, Section 6.(5) of the PCPA states that :

6.(5) "No person shall handle, store, transport, use or dispose of a pest control product in a way that is inconsistent with :

(a) the regulations; or

(b) if the product is registered, the directions on the label recorded in the Register, subject to the regulations."

This section of the Act applies to the products containing paradichlorobenzene ("Wax Moth Crystals") and naphtalene (moth balls sold under various trade names) as listed in Table 1, since these pest control products are not registered for use in beekeeping operations in Canada.

The use of any of the four products listed in Table 1 in beekeeping operations is a contravention to Sections 6.(1) and / or 6.(5) of the PCPA and is therefore forbidden. Illegal use of pesticides can lead to legal actions under the PCPA, such as administrative monetary penalties and prosecution.

Use of these products in beekeeping could also lead to pesticide residues in honey above the acceptable maximum residue limits (MRLs). A commodity found to contain pesticide residues above a set MRL will be deemed unfit for human consumption under the *Food and Drugs Act* (FDA), before being seized and disposed of by federal or provincial authorities.

We ask that you provide your members with the information contained in this letter in order to ensure they comply with the PCPA by only using registered pesticides, in accordance with their use instructions. Should you require additional information on the PCPA in general or how it affects pesticide use in beekeeping operations, please feel free to contact the undersigned.

Please accept our utmost regards.

Amanda Ziegler

Amanda Ziegler
Regional Pesticides Officer,
PMRA - SK Region
(306) 975-5219

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Amanda Ziegler

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Regional Pesticides Officer,
PMRA - SK Region
(306) 975-5219

WANT ADS

For Sale

Equipment for a 25-hive operation which includes: supers, bottoms, covers, boxes, pails, smokers, and extracting equipment. All in excellent condition.

Package price - $8,500.

Will sell individually. For more information, please contact:

Paul MacFarlane,

Glen Ewen, Sk.

306-925-2001

NOTICE

When purchasing used beekeeping equipment or live bees, ask to see a "Permit to Sell."

The "Permit to Sell" will indicate when the equipment and bees were inspected for brood diseases and mites.

Permits are available from the Provincial Apiculturist in Prince Albert. Call (306) 953-2790;

or e-mail john.gruszka@gov.sk.ca

2008-2009 WINTER LOSS SURVEY
Beekeeper _____

1. How many hives did you have going into the winter of 2008-2009 _____indoors and/or _____ outdoors?

2. How many nucs did you have going into the winter of 2008-2009 _____ indoors and/or _____ outdoors?

3. How many hives survived the winter of 2008-2009 _____ indoors and/or _____ outdoors, and when were they checked _____ (date)?

4. How many nucs survived the winter of 2008-2009 _____ indoors and/or _____ outdoors and when were they checked _____ (date)?

5. In spring 2009, what per cent of surviving hives/nucs were strong (> 10+ frames of bees) _____%; average (6 – 9 frames of bees) _____per cent; weak (3 – 5 frames of bees) _____% ; very weak (< 3 frames of bees) _____% and when was this assessment made _____ (date)?

6. Major reasons why the colonies died or are so weak _____ _____(e.g. starvation, mites/disease, queens, granulated honey, etc...)?

7. What type of syrup did you feed in the fall (e.g. sucrose or high fructose corn syrup, fall honey or other) _____ _____?

8. What method of feeding did you use (e.g. barrel feeding or individual hive feeding), _____ what month did you start feeding _____ and when did you finish _____ ?

9. Did you monitor for varroa mite in the fall (yes or no) _____ ?

10. If yes, what method of monitoring did you use (e.g. mite-wash, sticky board, etc) _____and what was the level of infestation _____per cent (optional)?

11. Did you treat for varroa mites in the fall (yes or no) _____?

12. If yes, which product did you use (e.g.. Apistan®, CheckMite+™, Apivar®, Mite-AwayII™, oxalic acid or other) _____ _____?

13. Did you monitor for nosema disease in the fall (yes or no) _____ ?

14. If yes, what method of monitoring did you use (e.g. spore count, gut colour diagnostic, etc) _____and what was the level of infestation _____ (optional)?

15. Did you treat for nosema disease in the fall (yes or no) _____?

16. If yes, what method of application did you use (e.g. fumagilin B in syrup or other) _____?